

## **REMARKS**

Support for the amendment to Claim 1 can be found in the working examples in Tables 1 and 2 on pages 10-11. Examples 1 and 5, and Examples 4 and 8 provide support for the end points of the ranges now being claimed for the relative amounts of the mixture formed in (A), and component (3), the hollow microspheres. Examples 1 and 5 provide support for the embodiment in which 20% by wt. of the mixture is present and 80% by wt. of hollow microspheres are present. Examples 4 and 8 provide support for the embodiment in which 38.5% by wt. of the mixture is present and 61.5% by wt. of hollow microspheres are present. The remaining examples support embodiments between these upper and lower ranges. Examples 2 and 6 support an embodiment with 27% by wt. of the mixture and 73% by wt. of the hollow microspheres. Examples 3 and 7 support an embodiment with 33% by wt. of the mixture and 67% by wt. of hollow microspheres. Claim 1 has also been amended to correct an inadvertent typographical error in which the word "of" was omitted. Applicants respectfully submit that no new matter has been added by the preceding amendment to Claim 1.

Claims 1, 4-9 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the EP 0,005,903 patent in view of the Plummer et al reference (U.S. Patent 6,284,809).

The EP 0.005,903 reference relates to a process for the manufacture of polyurea foams. This process comprises reacting an organic polyisocyanate with at least a chemically equivalent amount of water in the presence of a catalyst for the reaction and a triaryl phosphate and/or an aromatic halogen compound.

U.S. Patent 6,284,809 discloses thermally insulating syntactic foam compositions. These are formed from a resin binder containing microspheres and minispheres. The resultant syntactic foams have a thermal conductivity of less than 0.120 watts/meter °K. These syntactic foam compositions comprise between about 35 and 50 volume %, preferably between 40 and 45 volume %, of hardened resin binder containing hollow microspheres. Thus, these syntactic foam compositions comprise between about 50 and 75 volume %, and preferably between 55 to 60 volume % of the minispheres, which have a diameter of 1/8 to 3/8 inch. See column 2, lines 60-65 and column 3, lines 15-16 and 45-51. The microspheres in the

hardened resin binder comprise between 45 and 50 volume % of hardened resin binder which contains the microspheres. Thus, the microspheres account for 45 to 50 volume % of the 35 to 50 volume % (and preferably 40 to 45 volume %) of the hardened resin binder containing the microspheres. In other words, the microspheres are between 15.75 volume % and 25 volume % of the total composition in the Plummer et al reference.

Applicants respectfully submit that one of ordinary skill in the art has no insight into the presently claimed invention upon reading this combination of references.

This combination of references leads the skilled artisan to combine the polyurea foams of the EP 005903 reference with the microspheres and minispheres of the Plummer et al reference (U.S. Patent 6,284,809). The polyurea foams of the EP '903 reference comprise the reaction product of an organic polyisocyanate with an at least chemically equivalent amount of water, in the presence of a catalyst, and a triaryl phosphate and/or an aromatic halogen compound. See page 3, lines 3-7. The syntactic foams of the Plummer et al reference comprise a resin binder, microspheres, and hollow minispheres. See column 2, lines 28-34 and lines 60-65 and column 3, lines 45-57; column 4, lines 6-9. Thus, combining these references results in the polyurea foams of the EP '903 patent with the microspheres and minispheres of the Plummer et al reference. These resultant polyurea products would comprise the reaction product of an organic polyisocyanate with an at least chemically equivalent amount of water, in the presence of a catalyst, and a triaryl phosphate and/or an aromatic halogen compound (from the EP '903 patent) and the microspheres and minispheres from the Plummer et al reference. Applicants respectfully submit that this is not the presently claimed invention. Accordingly, these references do not properly render the presently claimed invention obvious under 35 U.S.C. §103(a).

It is respectfully submitted that the reaction mixture of the present invention consists of a polyisocyanate and water with water being present in an excess of from 2 to 5 times the stoichiometric quantity required. The consisting of language in the present claims clearly excludes the triaryl phosphate and/or aromatic halogen compound required by the EP '903 patent from the present invention. The triaryl

phosphate and/or aromatic halogen compound provide a fire-retardant and/or plasticizing effect to the resultant foams. Thus, at least one of these components is essential to the polyurea foams of the EP '903 patent.

Applicants respectfully submit that it is improper to exclude these components from the polyurea foams disclosed by the EP '903 patent as this results in foams which are no longer suitable for their intended purpose in accordance with this reference. Both the CCPA and the Federal Circuit have consistently held that when a rejection under 35 U.S.C. §103(a) is based upon a modification of a reference that destroys the intent, purpose or function of the invention disclosed in the reference, such a proposed modification is not proper and a prima facie case of obviousness has not been established. (See *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).)

In addition, this combination of references leads the skilled artisan to conclude that both microspheres and minispheres are essential. In particular, at column 1, line 49 through column 2, line 3, the Plummer et al reference discloses that buoyancy and insulative capacity are functions of composition, density and volume filling of the hollow spheres, and the volume filling of hollow spheres in a syntactic composite article is a function of hollow sphere densities and packing factor(s) of the hollow spheres. The packing factor is, in turn, dependent on the size and size distribution and is measured as the ratio of bulk density to true particle density, with maximum packing and minimum density attained when spheres are touching. The packing factor is improved by using a combination of two distinct hollow sphere types which differ in size by at least a factor of seven.

It is apparent from this disclosure that the syntactic foam compositions of the Plummer et al reference require both the hollow microspheres and the hollow minispheres. As set forth above, the relative volume %'s of each of these types of spheres and of the foam composition are also disclosed. Accordingly, one skilled in the art combining these references would combine the polyurea (including the triaryl phosphate and/or aromatic halogen compound) with the microspheres and the minispheres from the Plummer et al reference. For the reasons as discussed above with respect to the EP '905 reference, it is clearly improper to exclude the minispheres from the syntactic foams. It is evident from the disclosure of the

Plummer et al reference that adequate packing and thus the desired density, buoyancy and insulative capacity can not be achieved without the combination of the minispheres and the microspheres. Applicants therefore submit that any modification of the Plummer et al reference that excludes microspheres or minispheres is improper as it destroys the intended function of the invention of this reference. (See *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).)


It is respectfully submitted by Applicants that the modifications to the EP 0005903 and the Plummer et al references that are necessary to "arrive at" the presently claimed invention destroy the function or intent of one or both references. Thus, these modifications are improper and a prima facie case of obviousness has not been established by the Examiner. It is therefore submitted that this rejection is improper and requested that it be withdrawn.

Furthermore, the present claims clearly require that the mixture formed in (A) comprise 20 to 38.5% by weight, and the hollow microspheres comprise 61.5 to 80% by weight, with the sum of the %'s by weight totaling 100% by weight of the cellular composite. Since the EP 0005903 does not disclose microspheres, it provides no insight into the presently required amount of microspheres. Although the Plummer et al reference discloses microspheres, these are always present in lesser volume amounts than the minispheres. In fact, based on the information provided in the specification at column 2, lines 54-65 and column 3, lines 45-51, the microspheres are present in amounts of from 15.75 volume % to 25.0 volume %, based on the total volume % of the composite. The minispheres therein are present in amounts of from 50 volume % to 65 volume %, based on the total volume % of the composite. The balance is obviously the resin.

Applicants respectfully submit that one of ordinary skill in the art has no insight into the presently claimed invention upon reading the EP 0005903 and/or the Plummer et al reference. It is respectfully submitted that these references do not fairly suggest the presently claimed invention to one of ordinary skill in the art.

In view of the above amendments and remarks, Applicants respectfully submit that the presently claimed invention is not properly rejected under 35 U.S.C. § 103(a) as being obvious over EP 0,005,903 in view of U.S. Patent 6,284,809. Applicants request that this rejection be withdrawn and Claims 1, 4-9 and 11 be allowed.

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